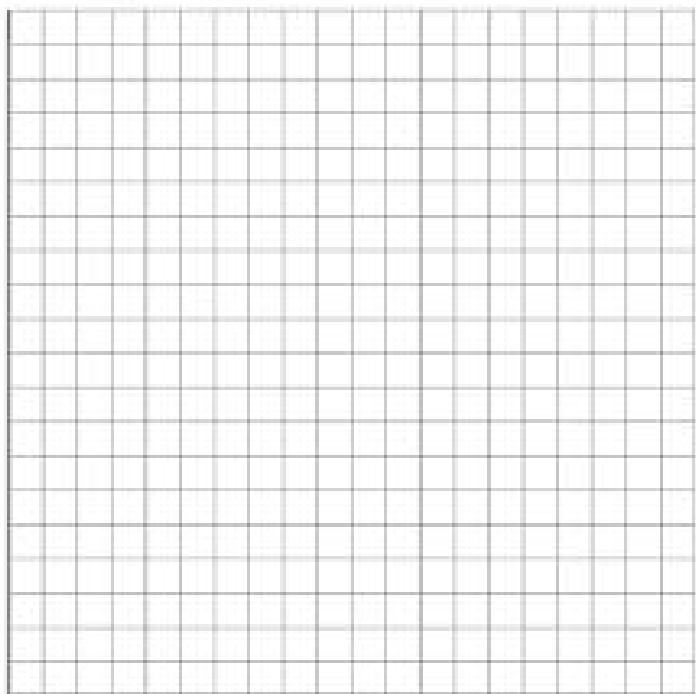


Name: _____

Q4 Test 2 Review

1: Ernesto is about to take a history test consisting of matching questions worth 10 points each and essay questions worth 25 points each. He is required to do at least 3 matching questions, but time restricts doing more than 12. Similarly, he must do at least 4 essays, but time restricts doing more than 15. If Ernesto is required to answer no more than 20 questions, how many of each type should he answer to maximize his score? What is the maximum score? (Use of the grid is optional)

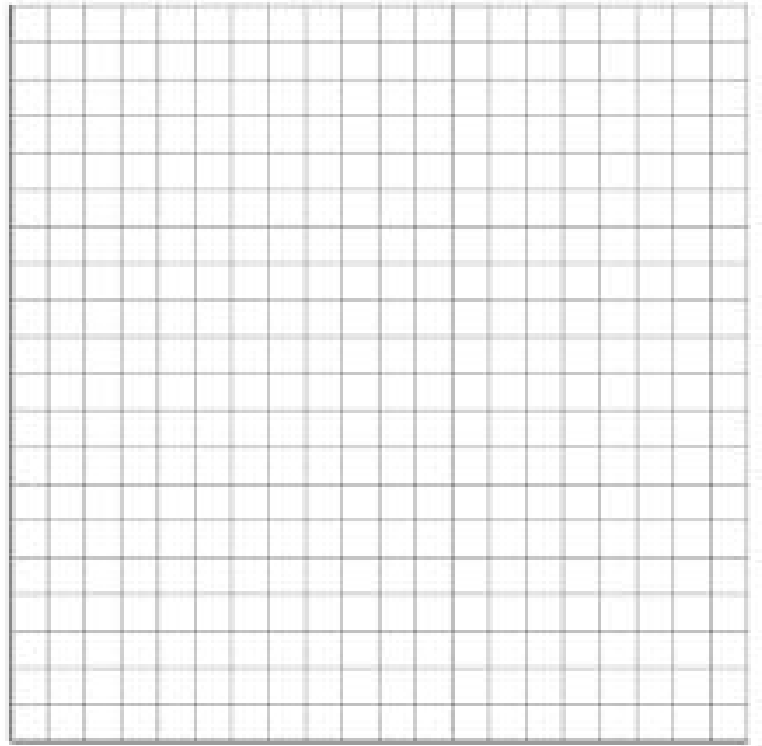


2: A chemical company uses two types of fuel for heating and processing. At least 3800 gallons of fuel are used each day. The burning of each gallon of #1 crude leaves a residue of 0.02 pounds of ash and 0.06 pounds of soot. Each gallon of #2 crude leaves a residue of 0.05 pounds of ash and 0.01 pounds of soot. The factory needs at least 120 pounds of ash and at least 136 pounds of soot each day. If crude #1 costs \$1.50 per gallon and #2 crude costs \$1.10 per gallon, then how many gallons of each type should be purchased in order to minimize costs? What is the lowest cost?

3. Graph the system of inequalities. Name the coordinates of the vertices of the feasible region. Find the maximum and minimum values of the given objective function for this region.

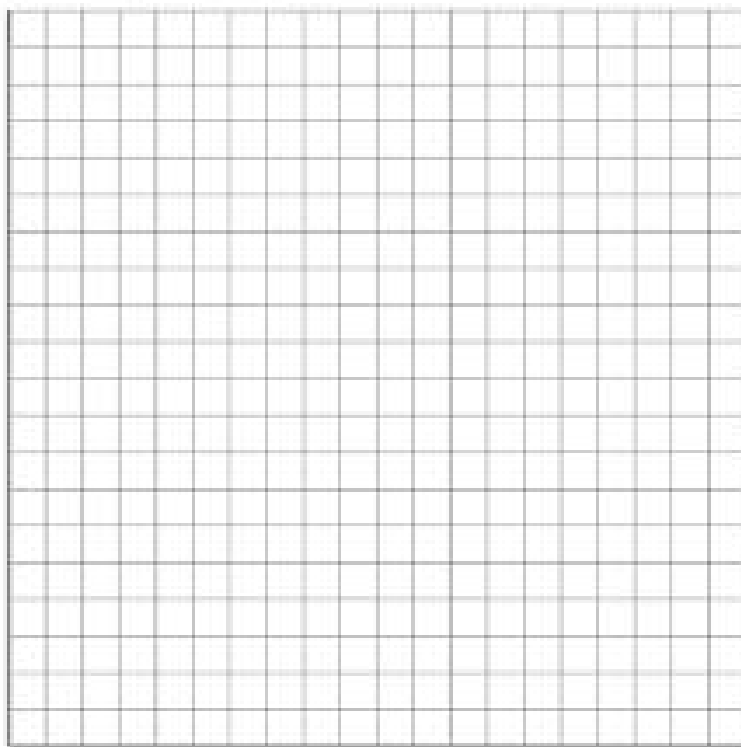
$$\left\{ \begin{array}{l} x \geq 0 \\ y \geq 0 \\ 2x + 3y \geq 6 \\ 3x - y \leq 15 \\ -x + y \leq 4 \\ 2x + 5y \leq 27 \end{array} \right\}$$

$$z = 5x + 7y$$



4. Graph the system of inequalities. State the coordinates of the vertices.

$$\left\{ \begin{array}{l} x^2 + y^2 \leq 100 \\ x^2 - y > -1 \\ y \geq x + 3 \end{array} \right.$$



5. Sketch the solution to the inequalities on the graph paper provided.

a. $y - 5 \geq -x^2 + 2x$

b. $x^2 + (y - 3)^2 > 4$

